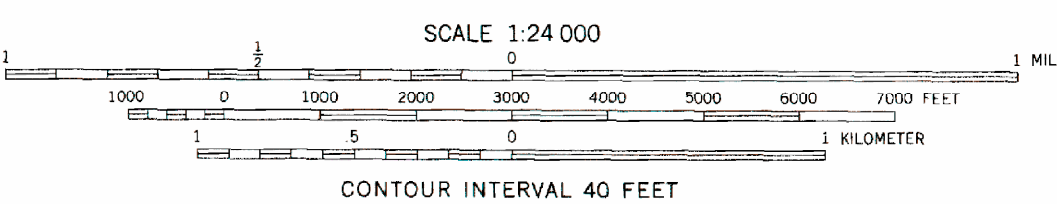


This geologic map was funded by a cooperative agreement between the U.S. Geological Survey and the Utah Geological Survey. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

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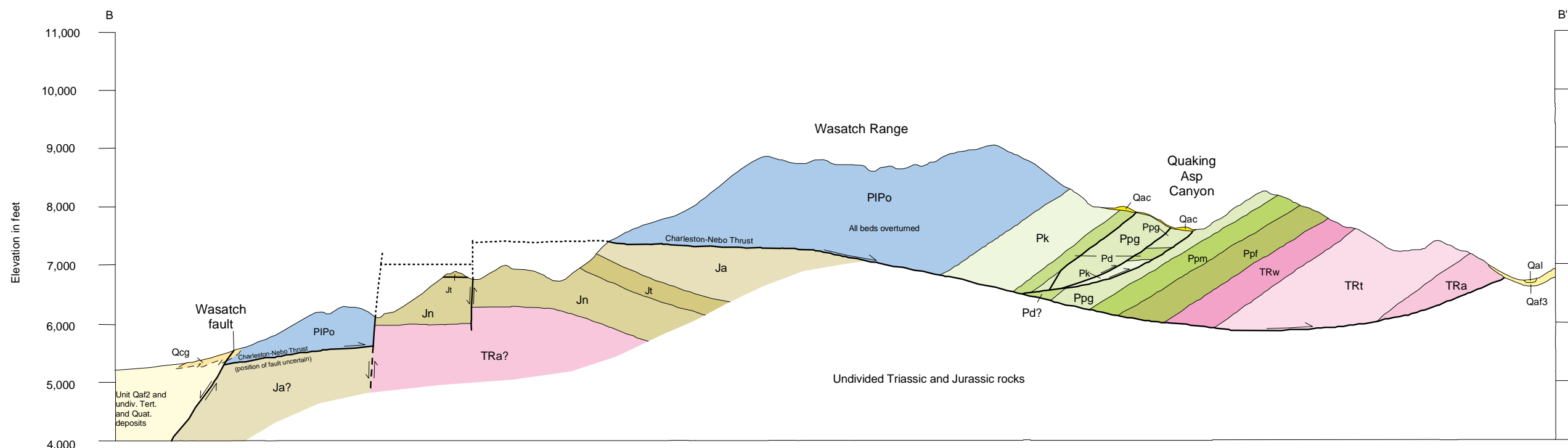
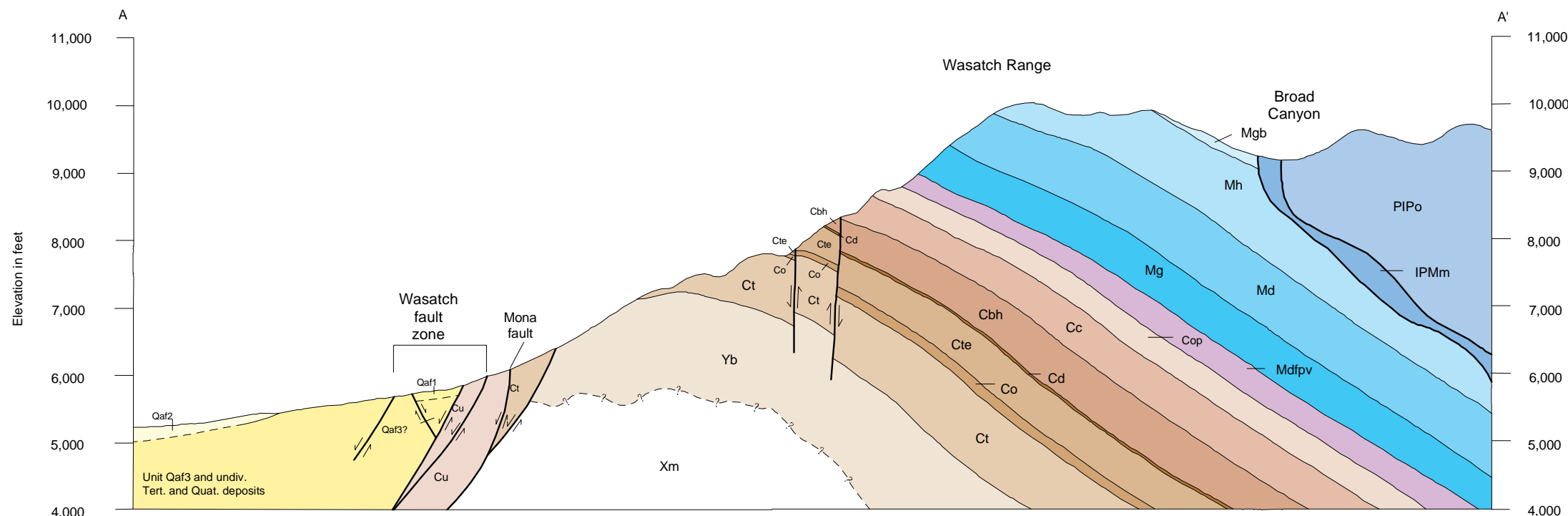
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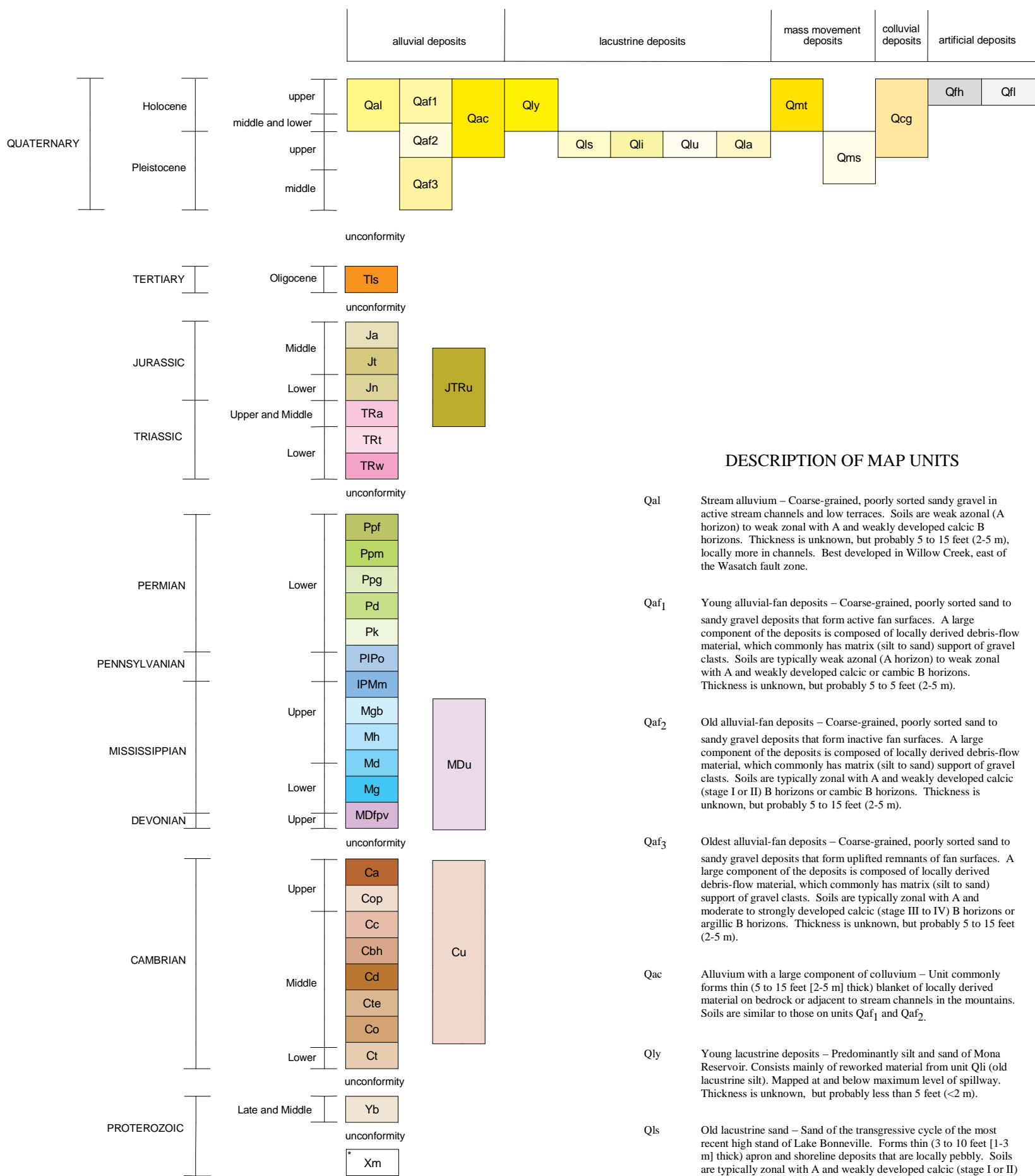
Geologic fieldwork by:
M.L. Sorensen, 1981-83 and 1987-91
(assisted by H. Pietropoli, 1982)
M.N. Machette, 1992
T.J. Felger, 1988-91

Provisional Geologic Map of the Mona Quadrangle, Juab and Utah Counties, Utah

by
Tracey J. Felger, Michael N. Machette, and Martin L. Sorensen
2004



CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qal Stream alluvium - Coarse-grained, poorly sorted sandy gravel in active stream channels and low terraces. Soils are weak azonal (A horizon) to weak zonal with A and weakly developed calcic B horizons. Thickness is unknown, but probably 5 to 15 feet (2-5 m), locally more in channels. Best developed in Willow Creek, east of the Wasatch fault zone.

Qal1 Young alluvial-fan deposits - Coarse-grained, poorly sorted sand to sandy gravel deposits that form active fan surfaces. A large component of the deposits is composed of locally derived debris-flow material, which commonly has matrix (silt to sand) support of gravel clasts. Soils are typically weak azonal (A horizon) to weak zonal with A and weakly developed calcic or cambic B horizons. Thickness is unknown, but probably 5 to 5 feet (2-5 m).

Qal2 Old alluvial-fan deposits - Coarse-grained, poorly sorted sand to sandy gravel deposits that form inactive fan surfaces. A large component of the deposits is composed of locally derived debris-flow material, which commonly has matrix (silt to sand) support of gravel clasts. Soils are typically weak azonal (A horizon) to weak zonal with A and weakly developed calcic (stage I or II) B horizons or cambic B horizons. Thickness is unknown, but probably 5 to 15 feet (2-5 m).

Qal3 Oldest alluvial-fan deposits - Coarse-grained, poorly sorted sand to sandy gravel deposits that form uplifted remnants of fan surfaces. A large component of the deposits is composed of locally derived debris-flow material, which commonly has matrix (silt to sand) support of gravel clasts. Soils are typically zonal with A and moderate to strongly developed calcic (stage III to IV) B horizons or argillic B horizons. Thickness is unknown, but probably 5 to 15 feet (2-5 m).

Qac Alluvium with a large component of colluvium - Unit commonly forms thin (5 to 15 feet [2-5 m] thick) blanket of locally derived material on bedrock or adjacent to stream channels in the mountains. Soils are similar to those on units Qal1 and Qal2.

Qly Young lacustrine deposits - Predominantly silt and sand of Mona Reservoir. Consists mainly of reworked material from unit Qli (old lacustrine silt). Mapped at and below maximum level of spillway. Thickness is unknown, but probably less than 5 feet (<2 m).

Qls Old lacustrine sand - Sand of the transgressive cycle of the most recent high stand of Lake Bonneville. Forms thin (3 to 10 feet [1-3 m] thick) apron and shoreline deposits that are locally pebbly. Soils are typically zonal with A and weakly developed calcic (stage I or II) B horizons or cambic B horizons. Shorelines poorly developed in Juab Valley owing to the rapid incision and departure of the lake (see Macchette and others, 1992).

Qli Old lacustrine silt - Silt of the transgressive cycle of the most recent high stand of Lake Bonneville. Forms thin (3 to 10 feet [1-3 m] thick) apron that formed in offshore and nearshore quiet-water conditions. Soils are typically zonal with A and weakly developed calcic (stage I or II) B horizons or cambic B horizons.

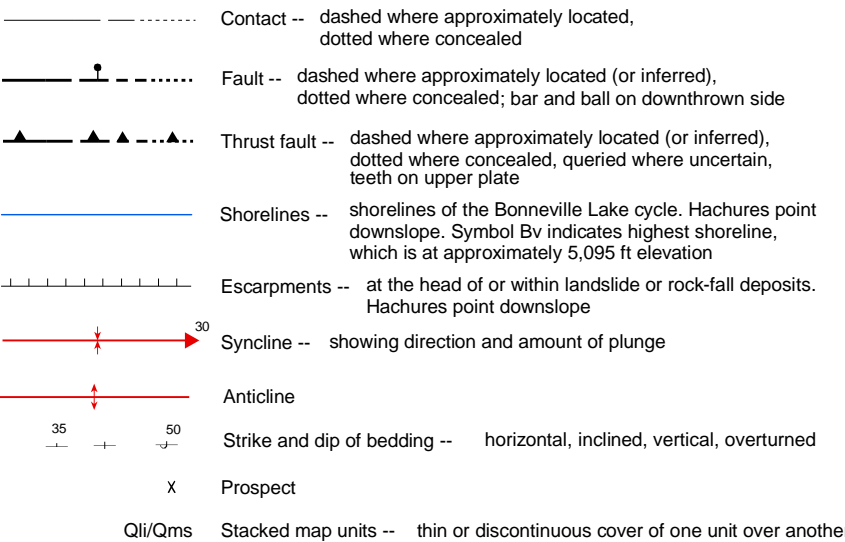
Qlh Old lacustrine deposits, undivided - Predominantly silt and sand of the transgressive cycle of the most recent high stand of Lake Bonneville. Mapped in areas of poor exposure. Soils are similar to those on units Qli (old lacustrine sand). Thickness is unknown, but probably less than 15 feet (<5 m).

Qla Old lacustrine and alluvial deposits, undivided - Unit mapped where lacustrine deposits are thin (less than 3 feet [1 m] thick) or where units intertongue at unmappable scales. Soils are similar to those on unit Qli (old lacustrine sand). Thickness is unknown, but probably less than 15 feet (<5 m).

Qmi Talus (rock-fall deposits) - Angular blocks of resistant bedrock on or at the bases of steep slopes, typically along the Wasatch fault zone or along steep canyons in the adjacent range. Older deposits generally have abundant cover of lichens or other weathering features. Thickness is variable, commonly 5 to 15 feet (2-5 m) except where thicker at the bases of slopes.

Qms Landslide deposits - There are three massive and many smaller landslides in the mapped area: (1) the Mona landslide, about 1 mile (1.6 km) north of Willow Creek, which derived from mass movement in the Manning Canyon Shale; (2) the Birch Creek landslide (at the mouth of Birch Creek), which probably derived from mass movement in the Arapen Shale; and (3) an unnamed landslide between Bear and Mona Creeks. In addition, there are remnants of another (probably

MAP SYMBOLS



| SYSTEM | SERIES | UNIT | MAP-UNIT SYMBOL | THICKNESS (feet) | LITHOLOGY |
|---------------|-------------------------|--|---|---------------------|-----------|
| QUATERNARY | Holocene | Surficial deposits | Qal, Qal1, Qal2, Qal3, Qal4, Qal5, Qal6, Qal7, Qal8, Qal9, Qal10, Qal11, Qal12, Qal13, Qal14, Qal15, Qal16, Qal17, Qal18, Qal19, Qal20, Qal21, Qal22, Qal23, Qal24, Qal25, Qal26, Qal27, Qal28, Qal29, Qal30, Qal31, Qal32, Qal33, Qal34, Qal35, Qal36, Qal37, Qal38, Qal39, Qal40, Qal41, Qal42, Qal43, Qal44, Qal45, Qal46, Qal47, Qal48, Qal49, Qal50, Qal51, Qal52, Qal53, Qal54, Qal55, Qal56, Qal57, Qal58, Qal59, Qal60, Qal61, Qal62, Qal63, Qal64, Qal65, Qal66, Qal67, Qal68, Qal69, Qal70, Qal71, Qal72, Qal73, Qal74, Qal75, Qal76, Qal77, Qal78, Qal79, Qal80, Qal81, Qal82, Qal83, Qal84, Qal85, Qal86, Qal87, Qal88, Qal89, Qal90, Qal91, Qal92, Qal93, Qal94, Qal95, Qal96, Qal97, Qal98, Qal99, Qal100 | 0-200 f (0-60 f) | |
| | Pleistocene | Unexposed basin-fill deposits | Qal1, Qal2, Qal3, Qal4, Qal5, Qal6, Qal7, Qal8, Qal9, Qal10, Qal11, Qal12, Qal13, Qal14, Qal15, Qal16, Qal17, Qal18, Qal19, Qal20, Qal21, Qal22, Qal23, Qal24, Qal25, Qal26, Qal27, Qal28, Qal29, Qal30, Qal31, Qal32, Qal33, Qal34, Qal35, Qal36, Qal37, Qal38, Qal39, Qal40, Qal41, Qal42, Qal43, Qal44, Qal45, Qal46, Qal47, Qal48, Qal49, Qal50, Qal51, Qal52, Qal53, Qal54, Qal55, Qal56, Qal57, Qal58, Qal59, Qal60, Qal61, Qal62, Qal63, Qal64, Qal65, Qal66, Qal67, Qal68, Qal69, Qal70, Qal71, Qal72, Qal73, Qal74, Qal75, Qal76, Qal77, Qal78, Qal79, Qal80, Qal81, Qal82, Qal83, Qal84, Qal85, Qal86, Qal87, Qal88, Qal89, Qal90, Qal91, Qal92, Qal93, Qal94, Qal95, Qal96, Qal97, Qal98, Qal99, Qal100 | 0-5000 f (0-1500 f) | |
| | Oligocene | Laguna Springs Volcanic Group | Tls | 4100-5 (1500) | |
| TERTIARY | Placene and Pliocene(?) | Unexposed basin-fill deposits | Qal1, Qal2, Qal3, Qal4, Qal5, Qal6, Qal7, Qal8, Qal9, Qal10, Qal11, Qal12, Qal13, Qal14, Qal15, Qal16, Qal17, Qal18, Qal19, Qal20, Qal21, Qal22, Qal23, Qal24, Qal25, Qal26, Qal27, Qal28, Qal29, Qal30, Qal31, Qal32, Qal33, Qal34, Qal35, Qal36, Qal37, Qal38, Qal39, Qal40, Qal41, Qal42, Qal43, Qal44, Qal45, Qal46, Qal47, Qal48, Qal49, Qal50, Qal51, Qal52, Qal53, Qal54, Qal55, Qal56, Qal57, Qal58, Qal59, Qal60, Qal61, Qal62, Qal63, Qal64, Qal65, Qal66, Qal67, Qal68, Qal69, Qal70, Qal71, Qal72, Qal73, Qal74, Qal75, Qal76, Qal77, Qal78, Qal79, Qal80, Qal81, Qal82, Qal83, Qal84, Qal85, Qal86, Qal87, Qal88, Qal89, Qal90, Qal91, Qal92, Qal93, Qal94, Qal95, Qal96, Qal97, Qal98, Qal99, Qal100 | 0-5000 f (0-1500 f) | |
| | Oligocene | Laguna Springs Volcanic Group | Tls | 4100-5 (1500) | |
| JURASSIC | Middle | Arapen Shale | Ja | 4100-5 (1500) | |
| | Middle | Twin Creek Limestone | Jt | 900 (160) | |
| | Lower | Navajo Sandstone | Jn | 800 (240) | |
| TRIASSIC | Upper-Middle | Ankareh Formation | Ta | 780 (230) | |
| | Lower | Thaynes Limestone | Tt | 1000-1300 (330-390) | |
| | Lower | Woodside Formation | Trw | 400-700 (180-215) | |
| PERMIAN | Lower | Park City Formation - Franson Member | Ppf | 100-500 (30-150) | |
| | Lower | Meade Peak Phosphatic Shale Member | Ppm | 0-400 (0-120) | |
| | Lower | Grandeur Member | Ppg | 150-500 (45-150) | |
| PENNSYLVANIAN | Lower | Diamond Creek Sandstone | Pd | 225-315 (70-100) | |
| | Lower | Kirkman Limestone | Pk | 450-1150 (140-350) | |
| MISSISSIPPIAN | Upper | Manning Canyon Shale | PMm | ? | |
| | Upper | Great Blue Limestone | Mgb | 200-750 (60-230) | |
| | Upper | Humburg Formation | Mh | 900-1000 (275-305) | |
| DEVONIAN | Upper | Deseret Limestone | Md | 800-900 (245-275) | |
| | Upper | Gardison Limestone | Mg | 450-650 (120-160) | |
| | Upper | Fitchville Formation, Pinyon Peak Limestone, and Victoria Formation, undivided | MDpfv | 250-350 (75-100) | |
| CAMBRIAN | Upper | Ajax(?) Dolomite | Ea | 150 (45) | |
| | Upper | Opex Formation | Eop | 300-500 (120-150) | |
| | Upper | Cole Canyon Dolomite | Ecc | 350-500 (105-150) | |
| PROTEROZOIC | Middle | Bluebird Dolomite, and Herkimer Limestone, undivided | Ebh | 400-800 (120-160) | |
| | Middle | Dagmar Dolomite | Ed | 75-100 (25-30) | |
| | Middle | Teutonic Limestone | Ete | 110 (35) | |
| PROTEROZOIC | Lower | Ophir Limestone | Eo | 175-215 (55-65) | |
| | Lower | Tutic Quartzite | Ee | 800-1000 (245-300) | |
| | Lower | Big Cottonwood Formation | Yb | 450-500 (140-150) | |

* shown in cross section only